

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-085558

(43)Date of publication of application : 26.03.2002

(51)Int.Cl. A61M 5/158  
A61M 5/32

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(54) PUNCTURE TOOL AND RETENTION NEEDLE ASSEMBLY

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a puncture tool and a retention needle assembly, with which the tip of a needle body can be prevented from jumping out of a protector and safety in disposal, or the like, is improved.

SOLUTION: The retention needle assembly 1 is constituted with an outer needle with hub composed of an outer needle, which is a retention needle, and an outer needle hub provided at the base end part of the outer needle, an inner needle with hub composed of an inner needle 5 (needle body) to be used while being inserted into the outer needle and an inner needle hub provided at the base end part of the inner needle 5, and a protector 8 capable of housing a needle tip 51 of the inner needle 5. The protector 8 is provided with a first portion 81 and a second portion 82 existent through a link part 83 to this first portion 81. On a top end wall 811 of the first portion 81, side walls 812 and 813 are formed. Even when the first portion 81 tries to be deviated from the second portion 82 in the y-axis direction, the side wall 812 or 813 is abutted to a top end wall 821 of the second portion 82. Thus, the deviation is prevented (blocked) and the needle tip 51 is prevented from being protruded from a position close to the top end of the protector to the side.

CLAIMS

[Claim(s)]

[Claim 1]A needle object which has a sharp needle tip at a tip.

A protector in which it is relatively installed movable to said needle object, and said needle object can store a needle tip.

Are the above the puncture tool which it had and said protector, When it can be displaced into the 1st posture that enables movement of said needle object to this protector, and the 2nd posture that stores a needle tip of said needle object and prevents passage of a needle tip of this needle object and said protector is said 2nd posture, It has a needle tip projection checking means which prevents that a needle tip of said needle object projects in the side of this protector.

[Claim 2]Said protector is provided with a connecting part which connects a part, the 2nd part, and the 1st said 1st part and said 2nd part, The puncture tool according to claim 1 which it is constituted so that the tip side can open and close with displacement of said 2nd part to said 1st part, and said tip side opens in said 1st posture, and said tip side closes in said 2nd posture.

[Claim 3]in said 2nd posture, as for said needle tip projection checking means, said 2nd part receives an opening and closing direction of said protector to said 1st part -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- the puncture tool according to claim 2 constituted so that it may prevent shifting in the vertical direction.

[Claim 4]In said 2nd posture, said needle tip projection checking means to said 1st part said 2nd part, as opposed to an opening and closing direction of said protector -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- the puncture tool according to claim 2 which has the contact part provided so that one of said 1st part and said 2nd part might contact another side, when it was going to shift in the vertical direction.

[Claim 5]said needle tip projection checking means receives an opening and closing direction of said protector in said 2nd posture -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- the puncture tool according to claim 2 which has a contact part which contacts this needle tip when a needle tip of said needle object moves in the vertical direction.

[Claim 6]said needle tip projection checking means receives an opening and closing direction of said protector in said 2nd posture -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle

object -- abbreviated, when a needle tip of said needle object moves in the vertical direction, The puncture tool according to claim 2 constituted so that at least one side of said 1st part and said 2nd part may be made to follow a motion of this needle tip.

[Claim 7]The puncture tool according to any one of claims 1 to 6 which said protector is displaced into said 1st posture by carrying out elastic deformation, and is displaced into said 2nd posture according to the stability.

[Claim 8]The puncture tool according to any one of claims 1 to 7 which has a secession checking means which prevents secession from said needle object of said protector.

[Claim 9]A detention needle assembly which has the puncture tool according to any one of claims 1 to 8, comprising:

Said needle object is a tubular inner needle which has an inner needle hub in the end face side, and is an outer needle of hollow which can insert said inner needle.

An outer needle hub installed in a end face of said outer needle.

[Claim 10]The detention needle assembly according to claim 9 in which said protector is located inside said outer needle hub when the detention needle assembly concerned is an assembly state.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to a puncture tool and a detention needle assembly. It is related with the detention needle assembly provided with the puncture tool and this which are used for a blood vessel by carrying out a puncture in the case of an infusion solution or blood collecting in more detail, for example.

[0002]

[Description of the Prior Art]When performing an infusion solution to a patient, the puncture of the detention needle connected with a transfusion line is carried out to a patient's blood vessel, it is detained, and this is performed. Such a detention needle comprises an outer needle in the air, an outer needle hub which adhered to the end face of an outer needle, an inner needle which is inserted into said outer needle and has a sharp needle tip at a tip, and an inner needle hub which adhered to the end face of an inner needle.

[0003]When carrying out the puncture of this detention needle to a patient's blood vessel, an inner needle is inserted into an outer needle, and puncture operation is performed where the needle tip of an inner needle is made to project from the tip of an outer needle. And if the needle tip of an inner needle reaches in a blood vessel, the blood which flowed from the opening of the needle tip will pass along the lumen of an inner needle, and will flow into the inside of a transparent inner needle hub (flashback). Thereby, it can check that the inner needle has secured the blood vessel.

[0004]If this flashback is checked, an inner needle and an outer needle will be carried forward slightly, and the tip of an outer needle will be inserted into a blood vessel. Subsequently, grasping an outer needle by hand, an inner needle is sampled from an outer needle and the connector of a transfusion line is connected to an outer needle hub. And an infusion solution is prescribed for the patient via the transfusion line and outer needle which were connected.

[0005]By the way, since it becomes unnecessary [ the inner needle sampled from the outer needle ], abandonment is presented, but when this is discarded as it is, there is a possibility that the accident in which a discarding work company etc. point at a finger etc. with the needle tip of an inner needle accidentally may occur. In particular, since blood adheres and remains, there is also a possibility of causing infection in the surface and the inside of an inner needle, with such an incorrect prickle.

[0006]Then, in order to solve this problem, to the inner needle and the inner needle hub, it is relatively movable and the detention needle provided with the protector which can store the needle tip of an inner needle is proposed.

[0007]Drawing 13 and drawing 14 are the perspective views showing the composition of the protector of the conventional detention needle, respectively.

[0008]As shown in drawing 13, the protector 120 of the conventional detention needle 100 is formed by bending a flat spring, and is, and it is energized by the stability in the assembly state which is not illustrated in the direction which the tip side (left-hand side in drawing 13) closes.

[0009]In this detention needle 100, when sampling from the outer needle which does not illustrate the inner needle 110, the protector 120 moves to that tip side to the inner needle 110, and as shown in drawing 13, the needle tip 111 of the inner needle 110 is stored in the protector 120.

[0010]And since the tip side of the protector 120 will close once the needle tip 111 of the inner needle 110 is

stored in the protector 120, Even if the protector 120 tends to move to the end face side (drawing 13 Nakamigi side) to the inner needle 110, the tip side of the protector 120 contacts the needle tip 111, and, thereby, the state where the needle tip 111 was stored in the protector 120 is held.

[0011]by installing this protector 120, a discarding work company etc. prevent the accident in which a finger etc. are accidentally stabbed with the needle tip 111 of the inner needle 110 -- things can be carried out.

[0012]However, if the inner needle 110 is pushed forcing the protector 120 on the body surface 130 in said detention needle 100 as direction of the protector 120 is shown in drawing 13, as shown in drawing 14, The protector 120 shifts to the drawing 14 Nakagami down (the direction of an arrow) (opening), and the needle tip 111 of the inner needle 110 may jump out of near the tip of the protector 120.

[0013]

[Problem(s) to be Solved by the Invention]\*\* to prevent can perform that the needle tip of a needle object jumps out of a protector, and the purpose of this invention is to provide the high puncture tool and detention needle assembly of safety on the occasion of discarding treatment etc.

[0014]

[Means for Solving the Problem]Such a purpose is attained by this invention of following the (1) - (22).

[0015](1) Are a puncture tool which is relatively installed at a tip movable to a needle object which has a sharp needle tip, and said needle object, and has a protector which can store a needle tip of said needle object, and said protector, When it can be displaced into the 1st posture that enables movement of said needle object to this protector, and the 2nd posture that stores a needle tip of said needle object and prevents passage of a needle tip of this needle object and said protector is said 2nd posture, A puncture tool having a needle tip projection checking means which prevents that a needle tip of said needle object projects in the side of this protector.

[0016](2) Said protector is provided with a connecting part which connects a part, the 2nd part, and the 1st said 1st part and said 2nd part, A puncture tool given in the above (1) which it is constituted so that the tip side can open and close with displacement of said 2nd part to said 1st part, and said tip side opens in said 1st posture, and said tip side closes in said 2nd posture.

[0017](3) in said 2nd posture, as for said needle tip projection checking means, said 2nd part receives an opening and closing direction of said protector to said 1st part -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- a puncture tool given in the above (2) constituted so that it may prevent shifting in the vertical direction.

[0018](4) In said 2nd posture, said needle tip projection checking means to said 1st part said 2nd part, as opposed to an opening and closing direction of said protector -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- a puncture tool given in the above (2) which has the contact part provided so that one of said 1st part and said 2nd part might contact another side, when it was going to shift in the vertical direction.

[0019](5) said needle tip projection checking means receives an opening and closing direction of said protector in said 2nd posture -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- a puncture tool given in the above (2) which has a contact part which contacts this needle tip when a needle tip of said needle object moves in the vertical direction.

[0020](6) A puncture tool given in the above (5) by which said contact part is provided in at least one flank of said 1st part and said 2nd part.

[0021](7) said needle tip projection checking means receives an opening and closing direction of said protector in said 2nd posture -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated, when a needle tip of said needle object moves in the vertical direction, A puncture tool given in the above (2) constituted so that at least one side of said 1st part and said 2nd part may be made to follow a motion of this needle tip.

[0022](8) A puncture tool given in the above (7) made when said flattery contacts a portion between a tip and a end face. [ in / in said needle object / at least / one side of said 1st part and said 2nd part ]

[0023](9) A puncture tool the above (1) which said protector is displaced into said 1st posture by carrying out elastic deformation, and is displaced into said 2nd posture according to the stability thru/or given in either of (8).

[0024](10) A puncture tool the above (1) formed when said protector processes a tabular elastic body thru/or given in either of (9).

[0025](11) A puncture tool the above (1) which has a secession checking means which prevents secession from said needle object of said protector thru/or given in either of (10).

[0026](12) To the above (1) thru/or either of (11), are a puncture tool of a description a detention needle assembly which it has, and said needle object, A detention needle assembly which is a tubular inner needle which has an inner needle hub in the end face side, and is characterized by having an outer needle of hollow which can insert said inner needle, and an outer needle hub installed in a end face of said outer needle.

[0027](13) A detention needle assembly given in the above (12) to which said protector is located inside said

outer needle hub when the detention needle assembly concerned is an assembly state.

[0028](14) The 1st part and 2nd part are connected via a connecting part, and it is a protector which can store a needle tip of a needle object between said 1st part and said 2nd part, When said 1st part and said 2nd part can be displaced elastically, a pointer stop part which contacts a needle tip of said needle object at least at one side of said 1st part and said 2nd part is provided and a needle tip of said needle object is stored, A protector having a needle tip projection checking means which prevents that a needle tip of said needle object projects in the side of the protector concerned.

[0029](15) as for said needle tip projection checking means, said 2nd part receives these displacement directions to said 1st part -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- a protector given in the above (14) constituted so that it may prevent shifting in the vertical direction.

[0030](16) Said needle tip projection checking means to said 1st part said 2nd part, as opposed to these displacement directions -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- a protector given in the above (14) which has the contact part provided so that one of said 1st part and said 2nd part might contact another side, when it was going to shift in the vertical direction.

[0031](17) said needle tip projection checking means receives a displacement direction of said 1st part and said 2nd part -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated -- a protector given in the above (14) which has a contact part which contacts this needle tip when a needle tip of said needle object moves in the vertical direction.

[0032](18) A protector given in the above (17) by which said contact part is provided in at least one flank of said 1st part and said 2nd part.

[0033](19) said needle tip projection checking means receives a displacement direction of said 1st part and said 2nd part -- abbreviated -- it being vertical and receiving a longitudinal direction of said needle object -- abbreviated, when a needle tip of said needle object moves in the vertical direction, A protector given in the above (14) constituted so that at least one side of said 1st part and said 2nd part may be made to follow a motion of this needle tip.

[0034](20) A protector given in the above (19) made when said flattery contacts a portion between a tip and a end face. [ in / in said needle object / at least / one side of said 1st part and said 2nd part ]

[0035](21) The above (14) in which a pore by which said needle object is inserted in said connecting part is provided thru/or a protector given in either of (20).

[0036](22) The above (14) which said 1st part and said 2nd part intersect thru/or a protector given in either of (21).

[0037]

[Embodiment of the Invention]Hereafter, the protector of this invention, a puncture tool, and a detention needle assembly are explained in detail based on the suitable embodiment shown in an accompanying drawing.

[0038]Drawing of longitudinal section, drawing 3, and drawing 4 in which a 1st embodiment when <1st embodiment> drawing 1 and drawing 2 apply the puncture tool of this invention to a detention needle assembly, respectively is shown are a perspective view showing the composition of the protector with which the detention needle assembly of a 1st embodiment is provided, respectively. In the following explanation, the right-hand side in drawing 1 - drawing 4 is called "end face", and left-hand side is called "tip."

[0039]The x axis, the y-axis, and the z-axis which made z shaft orientations and the opening and closing direction (displacement direction of the 1st part 81 and the 2nd part 82) of the protector 8 x shaft orientations for the longitudinal direction of the inner needle (needle object) 5 mentioned later in drawing 1 - drawing 4 on account of explanation and which intersect perpendicularly mutually are assumed.

[0040]The detention needle assembly (reusable puncture needle assembly) 1 shown in drawing 1 is provided with the following.

The outer needle 2 which it has an outer needle and an inner needle, and the detention needle assembly for infusion solutions is constituted especially, and is a detention needle.

The outer needle 4 with a hub which comprised the outer needle hub 3 established in the base end of the outer needle 2.

The inner needle (needle object) 5 used inserting into the outer needle 2.

The protector (wrap) 8 which can store the needle tip 51 of the inner needle 7 with a hub which comprised the inner needle hub 6 established in the base end of the inner needle 5, and the inner needle 5.

Among these, the puncture tool of this invention consists of the inner needle 7 with a hub, and the protector 8. Hereafter, the composition of each part is explained.

[0041]The outer needle 2 makes hollow shape and what has a certain amount of flexibility is used preferably. Especially as a component of the outer needle 2, although not limited, various elasticity resin, such as an ethylene-tetrafluoroethylene copolymer (ETFE), polyurethane, and polyether Nylon, is preferred, for example.

[0042]As for such an outer needle 2, the all or part may have internal visibility. An X-ray contrast medium

like barium sulfate and barium carbonate can be blended into the component of the outer needle 2, for example, and an imaging function can also be given.

[0043]The tip part of the outer needle 2 is making the tapered shape in which an outer diameter dwindles the puncture to a living body toward the direction of a tip in order easy and to carry out by low invasion.

[0044]the base end of the outer needle 2 -- the outer needle hub 3 -- liquid -- it adheres densely and the lumen of the outer needle 2 and the inside of the outer needle hub 3 are open for free passage. The outer needle hub 3 is an almost tubed member, and is making the tapered shape which the outer diameter and inside diameter increase gradually toward the direction of a end face. This tapered shape portion fits in with the tip part 64 of the inner needle hub 6 mentioned later.

[0045]this outer needle hub 3 -- desirable -- transparence (water-white) and coloring -- it comprises transparent or translucent resin and internal visibility is secured.

[0046]As opposed to the outer needle hub 3, the outer needle 2 is crimped and is being fixed by methods, such as welds (thermal melting arrival, high frequency weld, etc.) and adhesion by adhesives.

[0047]The inner needle 5 is a hollow needle, for example, comprises stainless steel, aluminum or an aluminum alloy, titanium, or a metallic material like a titanium alloy. The sharp needle tip 51 is formed in the tip part of the inner needle 5. The shape in particular of this needle tip 51 is not limited, but is making the shape which has the blade surface which carried out the predetermined angle inclination to the axis of the inner needle 5 in this embodiment.

[0048]Near the tip part of the inner needle 5, the flat part (secession checking means) 52 which carried out flat is formed. The size of the flat part 52 is set up to such an extent that the pore 831 of the protector 8 which the flat part 52 can pass the lumen of the outer needle 2, and is mentioned later cannot be passed.

[0049]Secession of the protector 8 from the inner needle 5 is prevented by this flat part 52 (inhibition).

[0050]This inner needle 5 is inserted in the lumen of the outer needle 2, and is further used in the state, i.e., the state which show in drawing 1, where the inner needle hub 6 was made to fit into the outer needle hub 3. Hereafter, this state is called "assembly state."

[0051]When it is made into an assembly state, let the length of the inner needle 5 be the length of the grade in which the needle tip 51 projects from the tip opening 21 of the outer needle 2 at least.

[0052]The base end of the inner needle 5 adheres with the tip part of the inner needle hub 6, and the lumen of the inner needle 5 is open for free passage with the building envelope of the inner needle hub 6. The inner needle hub 6 comprises an almost cylindrical hollow member.

[0053]Methods, such as adhesion according [ the fixing method for the inner needle hub 6 of the inner needle 5 ] to fitting, caulking, weld, and adhesives for example, or the method which used these together is mentioned.

[0054]this inner needle hub 6 -- desirable -- transparence (water-white) and coloring -- it comprises transparent or translucent resin and internal visibility is secured. Thereby, when the needle tip 51 secures a blood vessel, the flashback of the blood which flows via the inner needle 5 can be checked visually.

[0055]The flange 61 is formed in the periphery of the inner needle hub 6. For example, this operation can be ensured by hooking a finger on the flange 61 and performing this operation in the case of the operation which samples the inner needle 5 from the outer needle 2.

[0056]The tip part 64 of the inner needle hub 6 is making the outer needle hub 3 and the shape which can fit in. For example, the tip part 64 is made into the tapered shape which the outer diameter dwindles toward a tip.

[0057]And the tip side of this tip part 64 has composition which only contacts the end face of the protector 8 mentioned later.

[0058]The end face edge of the outer needle hub 3 and the fitting part 63 projected to the ring shape which fits in are formed in the periphery by the side of the end face of the tip part 64 of the inner needle hub 6.

[0059]The vent filter 62 is installed in the opening of the base end of the inner needle hub 6 so that this opening may be covered. Although this vent filter 62 penetrates a gas, a fluid has the character to intercept.

[0060]As an example of the vent filter 62, the porous body of various sintered porous bodies, a hydrophobic nonwoven fabric, and others is mentioned, for example. In this case, what sintered the material which contains a polymer material (powder) and hydrophilic (water solubility, water swelling) polymer, such as polyethylene, for example as a sintered porous body is preferred. Since aeration will also be intercepted by contact with a fluid (blood) if this sintered porous body is used, invasion of the air from the outside can be prevented.

[0061]The component in particular of the outer needle hub 3 and the inner needle hub 6 is not limited, but, respectively, For example, polyolefines, such as polyethylene, polypropylene, polybutadiene, and an ethylene-vinylacetate copolymer, Polyvinyl chloride, polyurethane, polystyrene, polymethylmethacrylate, Polyester, such as polycarbonate, polyamide, polyethylene terephthalate, and polybutylene terephthalate, Various resin materials, such as acrylic resin, ABS plastics, an AS resin, an ionomer, polyacetal, a polyphenylene sulfide, and a polyether ether ketone, are mentioned.

[0062]The protector 8 is provided with the 1st part 81 and the 2nd part 82 that exists via the connecting part 83 to this 1st part 81, and is formed in one of what the tabular member (elastic body) which has elasticity (it

changes elastically) is bent for (it is processed).

[0063]This protector 8 changes into the 1st posture (posture shown in drawing 1 and drawing 3) that enables movement of the inner needle 5 to the protector 8 concerned, and the 2nd posture (posture shown in drawing 2 and drawing 4) that stores the needle tip 51 of the inner needle 5, and prevents passage of that needle tip 51 (displacement). Hereafter, the protector 8 is explained.

[0064]The connecting part 83 constitutes the base end of the protector 8, and the pore 831 in which the inner needle 5 is inserted is formed in the center section of this connecting part 83. The flat part 52 of said inner needle 5 is located in the tip side from this pore 831.

[0065]The tip part of the 1st part 81 is crooked in the 2nd part 82 side (the drawing 3 side and the drawing 4 Nakashita side), and the side attachment walls (contact part) 812 and 813 projected towards the end face side are formed in the both ends (side part) of y shaft orientations of this tip wall (pointer stop part) 811, respectively.

[0066]The tip part of the 2nd part 82 is crooked in the 1st part 81 side (the drawing 3 side and the drawing 4 Nakagami side), and with the 2nd posture, as shown in drawing 4, this tip wall (pointer stop part) 821 is an end face side of said tip wall 811, and is located between the side attachment wall 811 and the side attachment wall 812.

[0067]In an assembly state, the protector 8 takes the 1st posture shown in drawing 1 and drawing 3. That is, as shown in drawing 3, by the 2nd part 82 being displaced to the 1st part 81 so that the mutual tip side may keep away, the tip side of the protector 8 opens and the inner needle 5 is located between the tip wall 811 and the tip wall 821. At this time, elastic deformation of the protector 8 is carried out, and it is energized in the direction which the tip side closes according to that stability.

[0068]In this assembly state, as mentioned above, the inner needle 5 is relatively movable to z shaft orientations to the protector 8.

[0069]In this assembly state, while the base end of the protector 8 contacts the tip part 64 of the inner needle hub 6, the tip part of the protector 8 contacts the medial surface of the outer needle hub 3, and the protector 8 is supported to the outer needle hub 3 by that friction, enabling free attachment and detachment. That is, the protector 8 is located inside the inner needle hub 6.

[0070]When the inner needle hub 6 and the inner needle 5 are moved to the end face side to the protector 8 and the needle tip 51 of the inner needle 5 passes the tip walls 811 and 821, the tip side of the protector 8, As shown in drawing 4, it closes according to the stability (the 2nd part 82 is displaced to the 1st part 81 so that the mutual tip side may approach). That is, the protector 8 takes the 2nd posture shown in drawing 2 and drawing 4.

[0071]Thereby, even if the needle tip 51 of the inner needle 5 is stored in the protector 8 and the inner needle 5 tends to move to the tip side to the protector 8, the needle tip 51 contacts the tip wall 811 or 821, and the movement is prevented. That is, projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0072]On the other hand, the flat part 52 of the inner needle 5 cannot move the inner needle 5 to the end face side to the protector 8, when it is located near the pore 831 of the protector 8 and this flat part 52 is caught in the pore 831. That is, secession of the protector 8 from the inner needle 5 is prevented (inhibition).

[0073]Even if the 1st part 81 tends to shift to y shaft orientations to the 2nd part 82, the side attachment wall 812 or 813 of the 1st part 81 contacts the tip wall 821 of the 2nd part 82 (even if the tip side of the protector 8 tries to open to y shaft orientations), and, thereby, said gap is prevented (inhibition). Thereby, the needle tip 51 is prevented from projecting from near the tip of the protector 8 to the side (inhibition).

[0074]Therefore, a needle tip projection checking means is constituted by said tip wall 821 and the side attachment walls 812 and 813.

[0075]Thus, \*\* which the needle tip 51 projects from the protector 8 can be prevented certainly.

[0076]The component in particular of the protector 8 is not limited, but For example, polyethylene, Polyolefines, such as polypropylene, polybutadiene, and an ethylene-vinylacetate copolymer, Polyvinyl chloride, polyurethane, polystyrene, polymethylmethacrylate, Polyester, such as polycarbonate, polyamide, polyethylene terephthalate, and polybutylene terephthalate, Acrylic resin, ABS plastics, an AS resin, an ionomer, polyacetal, Various metallic materials, such as various resin materials, such as a polyphenylene sulfide and a polyether ether ketone, stainless steel, an aluminum alloy, copper or a copper system alloy, titanium, or a titanium alloy, etc. are mentioned, and various metallic materials are preferred among these.

[0077]It cannot be overemphasized that the protector 8 may comprise two or more members (parts).

[0078]Next, an example of the directions for the detention needle assembly 1 is explained in detail.

[1] Carry out the puncture of the inner needle 5 and the outer needle 2 to a patient's blood vessel (a vein or an artery), making the detention needle assembly 1 into an assembly state, and grasping inner needle hub 6 grade by hand.

[0079][2] If the puncture of the needle tip 51 of the inner needle 5 is carried out to a blood vessel, blood flows backwards the inside of the inner needle 5 in the direction of a end face with the internal pressure (blood

pressure) of a blood vessel, it is introduced in the inner needle hub 6, and this flashback can be recognized visually via the inner needle hub 6 which has visibility. It can know that the needle tip 51 of the inner needle 5 secured the blood vessel by this.

[0080]In addition -- although the air in the inner needle hub 6 is discharged through the vent filter 62 with the inflow of this blood, the blood cannot pass the vent filter 62 -- the exterior -- leaking -- appearance -- carrying out -- it is not generated.

[0081][3] If the inner needle 5 and the outer needle 2 are furthermore carried forward in the direction of a minute distance tip, the tip opening 21 of the outer needle 2 will be inserted into a blood vessel. Thereby, the outer needle 2 secures a blood vessel.

[0082][4] Pressing down by hand the outer needle 2 currently detained in the blood vessel, grasp the inner needle hub 6 by the hand of another side, and pull in the direction of a end face. Thereby, the inner needle 5 is sampled from the outer needle 2.

[0083][5] As mentioned above, the needle tip 51 of the inner needle 5 will pass the tip walls 811 and 821, and if the inner needle hub 6 is furthermore pulled in the direction of a end face, as shown in drawing 2 and drawing 4, the tip side of the protector 8 will close according to the stability.

[0084]Thereby, the needle tip 51 of the inner needle 5 is stored in the protector 8, and even if it tends to move so that the needle tip 51 may return in the direction of a tip again, the needle tip 51 cannot contact the tip wall 811 or 821, and it cannot return.

[0085][6] If the flat part 52 of the inner needle 5 is caught in the pore 831 of the protector 8 and pulls the inner needle hub 6 in the direction of a end face further almost as soon as the tip side of said protector 8 closes, after the inner needle 5 and the protector 8 have been united, The inner needle 5 and protector 8 are sampled out of the outer needle hub 3. That is, the inner needle 7 with a hub with which the needle tip 51 was stored in the protector 8, and the outer needle 4 with a hub are separated.

[0086]The needle tip 51 of this inner needle 7 with a hub is stored in the protector 8, and projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0087]Even if the 1st part 81 tends to shift to y shaft orientations to the 2nd part 82, the side attachment wall 812 or 813 of the 1st part 81 contacts the tip wall 821 of the 2nd part 82, and, thereby, said gap is prevented (inhibition). Thereby, it is prevented although the needle tip 51 projects from near the tip of the protector 8 to the side (inhibition).

[0088]When the flat part 52 of the inner needle 7 with a hub is caught in the pore 831 of the protector 8, the inner needle 7 with a hub is unmovable in the direction of a end face to the protector 8, and, thereby, secession of the protector 8 from the inner needle 5 is prevented (inhibition).

[0089][7] connecting the connector (not shown) of an infusion set, etc. to the outer needle hub 3 of the outer needle 4 with a hub with which the inner needle 5 was sampled quickly -- a law -- start administration of an infusion solution in accordance with a method.

[0090]Thus, after sampling the inner needle 5 from the outer needle 2, since the inner needle 7 with a hub becomes unnecessary, disposal is presented with it.

[0091]As explained above, according to this detention needle assembly 1, the needle tip 51 of the inner needle 7 with a hub removed from the outer needle 4 with a hub is stored in the protector 8. The accident in which the needle tip's 51 projecting from the tip of the protector 8 especially, those who perform discarding treatment since the needle tip 51 moves in the direction of a end face and the protector 8 does not separate from the inner needle 5, etc. stab fingers etc. with the needle tip 51 accidentally is prevented.

[0092]<A 2nd embodiment>, next a 2nd embodiment of the detention needle assembly of this invention are described.

[0093]Drawing 5 is a perspective view showing the composition (the 2nd posture of a protector) of the protector with which the detention needle assembly of a 2nd embodiment is provided.

[0094]The detention needle assembly 1 of a 2nd embodiment is hereafter explained focusing on a point of difference with a 1st embodiment mentioned above, and the explanation is omitted about the same matter. In the following explanation, the right-hand side in drawing 5 is called "end face", and left-hand side is called "tip."

[0095]The x axis, the y-axis, and the z-axis which made z shaft orientations and the opening and closing direction of the protector 8 x shaft orientations for the longitudinal direction of the inner needle (needle object) 5 and which intersect perpendicularly mutually are assumed on account of explanation like a 1st embodiment mentioned above in drawing 5.

[0096]It is the same as that of a 1st embodiment mentioned above except the composition of the protector 8 differing in the detention needle assembly 1 of a 2nd embodiment.

[0097]That is, in the detention needle assembly 1 of a 2nd embodiment, as shown in drawing 5, the 1st part 81 of the protector 8 and the 2nd part 82 make an abbreviation U shape, respectively, and they cross.

[0098]The tip part of the 1st part 81 is crooked in the 2nd part 82 side at two places, and the side attachment walls (contact part) 812 and 813 projected towards the end face side are formed in the both ends (side part) of

y shaft orientations of the tip wall 811 of the shape of this abbreviated L character, respectively.

[0099]In the 2nd posture in which the needle tip 51 of the inner needle 5 was stored in the protector 8 like the detention needle assembly 1 of a 1st embodiment mentioned above in this detention needle assembly 1, Even if the inner needle 5 tends to move to the tip side to the protector 8, the needle tip 51 contacts the corner 814 of the tip wall 811, and the movement is prevented. That is, projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0100]Even if the 1st part 81 tends to shift to y shaft orientations to the 2nd part 82, the side attachment wall 812 or 813 of the 1st part 81 contacts the tip wall 821 of the 2nd part 82 (even if the tip side of the protector 8 tries to open to y shaft orientations), and, thereby, said gap is prevented (inhibition). Thereby, it is prevented although the needle tip 51 projects from near the tip of the protector 8 to the side (inhibition).

[0101]According to this detention needle assembly 1, the same effect as the detention needle assembly 1 of a 1st embodiment mentioned above is acquired.

[0102]<A 3rd embodiment>, next a 3rd embodiment of the detention needle assembly of this invention are described.

[0103]Drawing 6 is a perspective view showing the composition (the 2nd posture of a protector) of the protector with which the detention needle assembly of a 3rd embodiment is provided.

[0104]The detention needle assembly 1 of a 3rd embodiment is hereafter explained focusing on a point of difference with a 1st embodiment mentioned above, and the explanation is omitted about the same matter. In the following explanation, the right-hand side in drawing 6 is called "end face", and left-hand side is called "tip."

[0105]The x axis, the y-axis, and the z-axis which made z shaft orientations and the opening and closing direction of the protector 8 x shaft orientations for the longitudinal direction of the inner needle (needle object) 5 and which intersect perpendicularly mutually are assumed on account of explanation like a 1st embodiment mentioned above in drawing 6.

[0106]It is the same as that of a 1st embodiment mentioned above except the composition of the protector 8 differing in the detention needle assembly 1 of a 3rd embodiment.

[0107]That is, in the detention needle assembly 1 of a 3rd embodiment, as shown in drawing 6, the tip part of the 1st part 81 is crooked in the 2nd part 82 side (drawing 6 Nakashita side) at two places. And it is the both ends (side part) of y shaft orientations of the tip wall 811 of the shape of this abbreviated L character, and the side attachment walls (contact part) 812 and 813 projected towards the end face side are formed in the position corresponding to that corner 814, respectively. Each side attachment walls 812 and 813 are formed, respectively so that the corner 814 may be covered from the side (y shaft orientations).

[0108]In the 2nd posture in which the needle tip 51 of the inner needle 5 was stored in the protector 8 like the detention needle assembly 1 of a 1st embodiment mentioned above in this detention needle assembly 1, Even if the inner needle 5 tends to move to the tip side to the protector 8, the needle tip 51 contacts the corner 814 of the tip wall 811, and the movement is prevented. That is, projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0109]And in this detention needle assembly 1, if the needle tip 51 of the inner needle 5 moves to y shaft orientations to the 1st part 81, that needle tip 51 contacts the side attachment wall 812 or 813 of the 1st part 81, and although the needle tip 51 projects from near the tip of the protector 8 to the side, thereby, it will be prevented (inhibition).

[0110]Therefore, a needle tip projection checking means is constituted by said side attachment walls 812 and 813.

[0111]According to this detention needle assembly 1, the same effect as the detention needle assembly 1 of a 1st embodiment mentioned above is acquired.

[0112]<A 4th embodiment>, next a 4th embodiment of the detention needle assembly of this invention are described.

[0113]Drawing 7 is a perspective view showing the composition (the 2nd posture of a protector) of the protector with which the detention needle assembly of a 4th embodiment is provided.

[0114]The detention needle assembly 1 of a 4th embodiment is hereafter explained focusing on a point of difference with a 3rd embodiment mentioned above, and the explanation is omitted about the same matter. In the following explanation, the right-hand side in drawing 7 is called "end face", and left-hand side is called "tip."

[0115]The x axis, the y-axis, and the z-axis which made z shaft orientations and the opening and closing direction of the protector 8 x shaft orientations for the longitudinal direction of the inner needle (needle object) 5 and which intersect perpendicularly mutually are assumed on account of explanation like a 3rd embodiment mentioned above in drawing 7.

[0116]It is the same as that of a 3rd embodiment mentioned above except the composition of the protector 8 differing in the detention needle assembly 1 of a 4th embodiment.

[0117]That is, in the detention needle assembly 1 of a 4th embodiment, as shown in drawing 7, the 1st part 81



of the protector 8 and the 2nd part 82 make an abbreviation U shape, respectively, and they cross.

[0118]In the 2nd posture in which the needle tip 51 of the inner needle 5 was stored in the protector 8 like the detention needle assembly 1 of a 3rd embodiment mentioned above in this detention needle assembly 1, Even if the inner needle 5 tends to move to the tip side to the protector 8, the needle tip 51 contacts the corner 814 of the tip wall 811, and the movement is prevented. That is, projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0119]If the needle tip 51 of the inner needle 5 moves to y shaft orientations to the 1st part 81, the needle tip 51 will contact the side attachment wall 812 or 813 of the 1st part 81, and, thereby, the needle tip 51 will be prevented from projecting from near the tip of the protector 8 to the side (inhibition).

[0120]According to this detention needle assembly 1, the same effect as the detention needle assembly 1 of a 3rd embodiment mentioned above is acquired.

[0121]<A 5th embodiment>, next a 5th embodiment of the detention needle assembly of this invention are described.

[0122]Drawing 8 is a perspective view showing the composition (the 2nd posture of a protector) of the protector with which the detention needle assembly of a 5th embodiment is provided.

[0123]The detention needle assembly 1 of a 5th embodiment is hereafter explained focusing on a point of difference with a 4th embodiment mentioned above, and the explanation is omitted about the same matter. In the following explanation, the right-hand side in drawing 8 is called "end face", and left-hand side is called "tip."

[0124]The x axis, the y-axis, and the z-axis which made z shaft orientations and the opening and closing direction of the protector 8 x shaft orientations for the longitudinal direction of the inner needle (needle object) 5 and which intersect perpendicularly mutually are assumed on account of explanation like a 4th embodiment mentioned above in drawing 8.

[0125]It is the same as that of a 4th embodiment mentioned above except the composition of the protector 8 differing in the detention needle assembly 1 of a 5th embodiment.

[0126]That is, in the detention needle assembly 1 of a 5th embodiment, as shown in drawing 8, the tabular lobe 815 projected towards the intersection of the 1st part 81 and the 2nd part 82 to the drawing 8 Nakashita side of the tip part of the 1st part 81 of the protector 8 is formed.

[0127]Similarly, the tabular lobe 822 projected towards the intersection of the 1st part 81 and the 2nd part 82 to the drawing 8 Nakagami side of the tip part of the 2nd part 82 of the protector 8 is formed.

[0128]In the 2nd posture in which the needle tip 51 of the inner needle 5 was stored in the protector 8 like the detention needle assembly 1 of a 4th embodiment mentioned above in this detention needle assembly 1, Even if the inner needle 5 tends to move to the tip side to the protector 8, the needle tip 51 contacts the corner 814 of the tip wall 811, and the movement is prevented. That is, projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0129]If the needle tip 51 of the inner needle 5 moves to y shaft orientations to the 1st part 81, the needle tip 51 contacts the side attachment wall 812 or 813 of the 1st part 81, and although the needle tip 51 projects from near the tip of the protector 8 to the side, thereby, it will be prevented (inhibition).

[0130]According to this detention needle assembly 1, the same effect as the detention needle assembly 1 of a 4th embodiment mentioned above is acquired.

[0131]<A 6th embodiment>, next a 6th embodiment of the detention needle assembly of this invention are described.

[0132]Drawing 9 is a perspective view showing the composition (the 2nd posture of a protector) of the protector with which the detention needle assembly of a 6th embodiment is provided.

[0133]The detention needle assembly 1 of a 6th embodiment is hereafter explained focusing on a point of difference with a 3rd embodiment mentioned above, and the explanation is omitted about the same matter. In the following explanation, the right-hand side in drawing 9 is called "end face", and left-hand side is called "tip."

[0134]The x axis, the y-axis, and the z-axis which made z shaft orientations and the opening and closing direction of the protector 8 x shaft orientations for the longitudinal direction of the inner needle (needle object) 5 and which intersect perpendicularly mutually are assumed on account of explanation like a 3rd embodiment mentioned above in drawing 9.

[0135]It is the same as that of a 3rd embodiment mentioned above except the composition of the protector 8 differing in the detention needle assembly 1 of a 6th embodiment.

[0136]That is, in the detention needle assembly 1 of a 6th embodiment, as shown in drawing 9, the 1st part 81 is crooked at four places. The 1st part 81 is specifically crooked in the 2nd part 82 side (drawing 9 Nakashita side) toward a tip in the beginning from that end face (let this portion be "the wall 816"), Next, it is crooked in the 2nd part 82 and opposite hand (drawing 9 Nakagami side) (let this portion be "the wall 817"), and, next, is crooked in the 2nd part 82 side, and the next is also crooked in the 2nd part 82 side.

[0137]The slits 841 and 842 in which the inner needle 5 is inserted are formed in the center section of the

walls 816 and 817, respectively. The slit 841 and the slit 842 are mutually open for free passage.

[0138]When the inner needle 5 and its flat part 52 are able to be inserted in, the needle tip 51 of the inner needle 5 moves the size of each slits 841 and 842 to y shaft orientations to the 1st part 81, respectively and the inner needle 5 contacts the walls 816 and 817, It is set up to such an extent that the needle tip 51 does not project from the tip wall 811 to the side (y shaft orientations).

[0139]In the 2nd posture in which the needle tip 51 of the inner needle 5 was stored in the protector 8 like the detention needle assembly 1 of a 3rd embodiment mentioned above in this detention needle assembly 1, Even if the inner needle 5 tends to move to the tip side to the protector 8, the needle tip 51 contacts the corner 814 of the tip wall 811, and the movement is prevented. That is, projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0140]And in this detention needle assembly 1, since the inner needle 5 is inserted in the slits 841 and 842, When the needle tip 51 of the inner needle 5 moves to y shaft orientations to the 1st part 81, the inner needle 5 contacts the edge which attends the slit 842 of the edge which attends the slit 841 of the wall 816, or the wall 817, and by this, The tip wall 811 is in the state which covered the tip side of the needle tip 51, and the 1st part 81 (tip wall 811) follows a motion of the inner needle 5 (needle tip 51). Thereby, it is prevented although the needle tip 51 projects from near the tip of the protector 8 to the side (inhibition).

[0141]Therefore, a needle tip projection checking means is constituted by said walls 816 and 817.

[0142]According to this detention needle assembly 1, the same effect as the detention needle assembly 1 of a 3rd embodiment mentioned above is acquired.

[0143]<A 7th embodiment>, next a 7th embodiment of the detention needle assembly of this invention are described.

[0144]Drawing 10 is a perspective view showing the composition (the 2nd posture of a protector) of the protector with which the detention needle assembly of a 7th embodiment is provided.

[0145]The detention needle assembly 1 of a 7th embodiment is hereafter explained focusing on a point of difference with a 6th embodiment mentioned above, and the explanation is omitted about the same matter. In the following explanation, the right-hand side in drawing 10 is called "end face", and left-hand side is called "tip."

[0146]The x axis, the y-axis, and the z-axis which made z shaft orientations and the opening and closing direction of the protector 8 x shaft orientations for the longitudinal direction of the inner needle (needle object) 5 and which intersect perpendicularly mutually are assumed on account of explanation like a 6th embodiment mentioned above in drawing 10.

[0147]It is the same as that of a 6th embodiment mentioned above except the composition of the protector 8 differing in the detention needle assembly 1 of a 7th embodiment.

[0148]That is, in the detention needle assembly 1 of a 7th embodiment, as shown in drawing 10, the pore 843 by which the inner needle 5 is inserted in the center section of the wall 816 of the protector 8 is formed.

[0149]The diameter of the pore 843 is a little larger than the outer diameter (diameter) of the inner needle 5, and it is set up, for example to such an extent that the flat part 52 of the inner needle 5 cannot pass. The flat part 52 of the inner needle 5 is located in the tip side from this pore 843.

[0150]In the 2nd posture in which the needle tip 51 of the inner needle 5 was stored in the protector 8 like the detention needle assembly 1 of a 6th embodiment mentioned above in this detention needle assembly 1, Even if the inner needle 5 tends to move to the tip side to the protector 8, the needle tip 51 contacts the corner 814 of the tip wall 811, and the movement is prevented. That is, projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0151]Since the inner needle 5 is inserted in the pore 843, if the needle tip 51 of the inner needle 5 moves to y shaft orientations to the 1st part 81, the tip wall 811 is in the state which covered the tip side of the needle tip 51, and the 1st part 81 (tip wall 811) follows a motion of the inner needle 5 (needle tip 51). Thereby, it is prevented although the needle tip 51 projects from near the tip of the protector 8 to the side (inhibition). Therefore, a needle tip projection checking means is constituted by said wall 816.

[0152]When the flat part 52 of the inner needle 5 is caught in the pore 843, the inner needle 5 is unmovable to the end face side to the protector 8. That is, secession of the protector 8 from the inner needle 5 is prevented (inhibition).

[0153]According to this detention needle assembly 1, the same effect as the detention needle assembly 1 of a 6th embodiment mentioned above is acquired.

[0154]In this invention, the slit which may form in each of the walls 816 and 817 of the protector 8 the pore in which the inner needle 5 is inserted and by which the inner needle 5 is inserted in it at the wall 816, for example may be formed, and the pore by which the inner needle 5 is inserted in the wall 817 may be formed.

[0155]<An 8th embodiment>, next an 8th embodiment of the detention needle assembly of this invention are described.

[0156]The perspective view in which drawing 11 shows the composition of the protector with which the detention needle assembly of an 8th embodiment is provided, and drawing 12 are the top views showing the

composition (the 2nd posture of a protector) of the protector with which the detention needle assembly of an 8th embodiment is provided.

[0157]The detention needle assembly 1 of an 8th embodiment is hereafter explained focusing on a point of difference with a 7th embodiment mentioned above, and the explanation is omitted about the same matter. In the following explanation, the right-hand side in drawing 11 and drawing 12 is called "end face", and left-hand side is called "tip."

[0158]The x axis, the y-axis, and the z-axis which made z shaft orientations and the opening and closing direction of the protector 8 x shaft orientations for the longitudinal direction of the inner needle (needle object) 5 and which intersect perpendicularly mutually are assumed on account of explanation like a 7th embodiment mentioned above in drawing 11 and drawing 12.

[0159]It is the same as that of a 7th embodiment mentioned above except the composition of the protector 8 differing in the detention needle assembly 1 of an 8th embodiment.

[0160]That is, in the detention needle assembly 1 of an 8th embodiment, as shown in drawing 11 and drawing 12, the 1st part 81 of the protector 8 and the 2nd part 82 make an abbreviation U shape, respectively, and they cross.

[0161]The pores 843 and 844 in which the inner needle 5 is inserted are formed in the center section of y shaft orientations of the walls 816 and 817 of the protector 8, respectively.

[0162]The diameter of the pore 843 is set as a little larger grade than the outer diameter (diameter) of the inner needle 5, for example, and the diameter of the pore 844 is a little larger than the outer diameter (diameter) of the inner needle 5, and it is set up, for example to such an extent that the flat part 52 of the inner needle 5 cannot pass. The flat part 52 of the inner needle 5 is located in the tip side from this pore 844.

[0163]In the 2nd posture in which the needle tip 51 of the inner needle 5 was stored in the protector 8 like the detention needle assembly 1 of a 7th embodiment mentioned above in this detention needle assembly 1, Even if the inner needle 5 tends to move to the tip side to the protector 8, the needle tip 51 contacts the tip wall 811 or 821, and the movement is prevented. That is, projection of the needle tip 51 from the tip of the protector 8 is prevented (inhibition).

[0164]Since the inner needle 5 is inserted in the pores 843 and 844, if the needle tip 51 of the inner needle 5 moves to y shaft orientations to the 1st part 81, the tip wall 811 is in the state which covered the tip side of the needle tip 51, and the 1st part 81 (tip wall 811) follows a motion of the inner needle 5 (needle tip 51). Thereby, it is prevented although the needle tip 51 projects from near the tip of the protector 8 to the side (inhibition).

[0165]Therefore, a needle tip projection checking means is constituted by said walls 816 and 817.

[0166]When the flat part 52 of the inner needle 5 is caught in the pore 844, the inner needle 5 is unmovable to the end face side to the protector 8. That is, secession of the protector 8 from the inner needle 5 is prevented (inhibition).

[0167]According to this detention needle assembly 1, the same effect as the detention needle assembly 1 of a 7th embodiment mentioned above is acquired.

[0168]As mentioned above, although the protector, puncture tool, and detention needle assembly of this invention were explained based on each embodiment of a graphic display, this invention is not limited to these and the composition of each part can be replaced by the thing of arbitrary composition of that the same function can be exhibited.

[0169]The protector, puncture tool, and detention needle assembly of this invention may combine two or more arbitrary composition in said 1st [ the ] - an 8th embodiment. The puncture tool of this invention may be a reusable puncture needle like a hypodermic needle, etc., for example.

[0170]

[Effect of the Invention]As stated above, according to this invention, the needle tip once stored in the protector is certainly prevented from projecting from the tip of a protector, and its neighborhood again, and safety is high on the occasion of discarding treatment etc.

[0171]When a secession checking means is established, what the once stored protector separates from a needle tip from the needle tip (it breaks away) can be prevented. Therefore, on the occasion of discarding treatment etc., safety is still higher.